

Claim Listing

1. Canceled.
2. Canceled
3. (Withdrawn) A method of manufacturing a thin speaker, characterized in an assembling comprising:
 - putting a magnetic circuit (2) on a central part of a first jig (1),
 - attaching a short columnar supporting member (7) for supporting the magnetic circuit (2) on an upper part thereof,
 - through a substantially cylindrical second jig (12) disposed around the member (7) for positioning a voice coil, disposing the voice coil (6) at a proper position in a magnetic gap of the magnetic circuit (2),
 - attaching a neck part of a cone-shaped diaphragm (3) to an outer periphery of the voice coil (6),
 - having an edge (4) at an outer peripheral part of the cone-shaped diaphragm (3) be supported by an outer peripheral part of an upper frame (5) formed to have a hole (5d) in a central part and to be put over a rear side of the diaphragm (3),
 - assembling a damper (9) from the rear side thereof, attaching its inner peripheral part to the outer periphery of the voice coil (6) and having an outer peripheral part be supported by a part around the hole (5d) of the upper frame (5),
 - pulling out the second jig (12) from the hole (5d),
 - putting a bottom frame (8) on from the rear side thereof, and
 - having the supporting member for the magnetic circuit (2) be supported by the bottom frame (8).
4. (Withdrawn). A method of manufacturing a thin speaker, characterized in an assembling comprising:
 - putting a magnetic circuit (2) on a central part of a first jig (1),
 - through a substantially cylindrical second jig (12) which is for positioning a voice coil and disposed around a short columnar supporting member (7A) provided on an upper

part of the magnetic circuit (2), disposing the voice coil (6) at a proper position in a magnetic gap of the magnetic circuit (2),

attaching a neck part of a cone-shaped diaphragm (3) to an outer periphery of the voice coil (6),

having an edge (4) at an outer peripheral part of the cone-shaped diaphragm (3) be supported by an outer peripheral part of an upper frame (5) formed to have a hole (5d) in a central part and to be put over a rear side of the diaphragm (3),

assembling a damper (9) from the rear side thereof, attaching its inner peripheral part to the outer periphery of the voice coil (6) and having an outer peripheral part be supported by a part around the hole (5d) of the upper frame (5),

pulling out the second jig (12) from the hole (5d),

putting a bottom frame (8) on from the rear side thereof, and

having the supporting member of the magnetic circuit (2) be supported by the bottom frame (8).

5. (New) A thin speaker comprising:

a frame of a two-piece structure including a circular dish-shaped upper frame (5) having a circular center hole (5d), and a circular dish-shaped bottom frame (8) having a central circular hole (8a) and a cylindrical part (8b) extending inward from a peripheral edge of the circular hole (8a), the bottom frame (8) being disposed and coupled concentrically with respect to the upper frame (5) with an outer peripheral flange part (8d) of the bottom frame (8) overlapped to an outer surface of a peripheral edge part of the center hole (5d) of the upper frame (5);

a vibration system including a cone-shaped diaphragm (3) coupled at an elastic edge (4) at an outer periphery of the diaphragm (3) to an outer peripheral edge of the upper frame (8), a cylindrical voice coil (6) having a first end positioned in an interior space of the diaphragm (3) and having an outer periphery of a second end coupled to an inner peripheral edge of the diaphragm (3), and an annular damper (9) coupled at inner peripheral edge to an outer peripheral portion of the second end of the voice coil (6) and

at an outer peripheral edge to the outer surface at the peripheral edge part of the center hole (5d) of the upper frame (5) for resiliently holding the inner periphery of the diaphragm (3); and

a magnetic circuit (2) including a yoke (2a) comprised of a circular disk part and an outer peripheral wall, a short columnar magnet (2b) provided within the yoke, a disk-shaped plate (2c) provided on an outer surface directed axially from the magnet (2b), and a short columnar supporting member (7) coupled at an end to an outer surface of the plate (2c) and inserted within the cylindrical part (8b) of the bottom frame (8), the magnetic circuit (2) forming a magnetic gap positioned in the interior space of the diaphragm (3) for receiving in the gap the other end having the voice coil (6).